City of Glendale

Water Services Financial Plan

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1. Executive Summary

1.1. Introduction

The City of Glendale, Arizona (City) provides water and/or wastewater service to approximately 59,300 customer accounts. The City's water and wastewater utilities are funded primarily from water and wastewater rates.

The City authorized Red Oak Consulting (Red Oak) to review the utilities' financial status and recommend rate adjustments, as necessary, to assure their continuing financial viability. This study includes:

- Development of water and wastewater financial plans for fiscal year (FY) 2013;
- Analysis of customer class cost of service for FY 2013; and
- Design of water and wastewater rates for FY 2013.

1.2. Definitions

References made to a year or fiscal year mean the year ending June 30. Existing rates mean water and wastewater rates in effect July 1, 2010. Base budget means FY 2012 budget without cost reductions or staff furloughs.

1.3. Study Assumptions

This rate study is based on numerous assumptions. Changes in these assumptions could have a material effect on study findings. Red Oak incorporated the following key assumptions into the study:

- Water Services includes combined water and wastewater utilities consistent with current accounting practices.
- Based on recent historical trends shown below, the number of accounts will remain unchanged during the study period.
- Water usage per account will remain unchanged during the study period.
- Future rate adjustments are implemented July 1 of each year.
- Water Services will strive to maintain the following reserve levels:
  - Ninety days of water O&M and 60 days of wastewater O&M as working capital reserve in operating funds
  - $2 million in water and wastewater capital funds

- Future bond issues have a 20-year term and 5.00% interest rate, and include 1.5% issuance cost and 0.35% surety bond.
- Minimum debt service coverage is 120%. General obligation bonds are excluded from the coverage calculation.
- General inflation is 3.4%. Chemical and electricity cost inflation is 3.4%. CIP inflation is 3.0%.

1.4. Usage Trends

Red Oak reviewed the City's water billing data for FY 2006 through FY 2011. This review indicated that water usage and customer accounts decreased substantially in FY 2009 and FY 2010 as follows:

- Annual water usage was virtually the same for FY 2006 through FY 2008, then decreased by 15% from 14.6 billion gallons in FY 2008 to 12.4 billion gallons in FY 2011.
- The total number of accounts increased from 60,600 in FY 2006 to 61,100 in FY 2008, then decreased by 3.8% to 58,800 in FY 2010. FY 2011 experienced an increase in accounts from FY 2010 by 0.7% to 59,300.

1.5. Water Rates

Principal findings of the water rate study, based on the assumptions provided in Section 1.3, are as follows:

- Water Services staff has developed a $5.7 million water capital improvement program for FY 2013.
- Projected water sales revenue under existing rates is adequate in FY 2013 to meet projected revenue requirements.
- In FY 2013 there is no projected rate adjustment needed for annual water sales revenue.
- Red Oak recommends the water utility financial plan be updated annually to reflect changes in revenue, O&M, capital improvement needs, and capital financing requirements.
- Red Oak conducted a comprehensive water utility cost of service analysis in accordance with standard methods supported by the American Water Works Association. This analysis determined the cost of providing water service to residential, commercial, and sprinkler customers for the FY 2013 test year.
- Existing water rates have been in effect since July 2010 and will remain in effect through FY 2013. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy. Existing rates have the following structure:
    - Base charges vary by meter size.

- Volume charges for residential customers use a 4-block increasing rate structure.
- Volume charges for commercial and sprinkler customers use a seasonal water rate structure. Winter rates are applied to water use during the months of November through April, and summer rates are applied to all water use during the months of May through October.

1.6. Wastewater Rates

Principal findings of the wastewater rate study, based on the assumptions provided in Section 1.3, are as follows:

- Water Services staff has developed a $7.7 million wastewater capital improvement program for FY 2013.
- Projected wastewater service revenue under existing rates is adequate in FY 2013 to meet projected revenue requirements.
- In FY 2013 there is no projected rate adjustment needed for annual wastewater sales revenue.
- Red Oak recommends the wastewater utility financial plan be updated annually to reflect changes in revenue, O&M, capital improvement needs, and capital financing requirements.
- Red Oak conducted a comprehensive wastewater utility cost of service analysis in accordance with standard methods supported by the Water Environment Federation. This analysis determined the cost of providing wastewater service to residential and commercial customers for the FY 2013 test year.
- Existing wastewater rates have been in effect since July 2010 and include a monthly base charge for all customers and volume charges that vary by customer class. These rates will remain in effect through FY 2013. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.

1.7. Irrigation

The City conducted an irrigation water rate study separate from the water and wastewater rate study. The findings of the study are as follows:

- In FY 2011, urban irrigation water service revenue under existing rates was not adequate to meet revenue requirements.
- Between FY 1998 and FY 2011, revenues have decreased over time, while expenditures have increased.

2. Water Rates

2.1. Introduction

The City of Glendale provides water service to over 59,300 customer accounts. The City's water operations are financially self-sufficient, with funding for O&M and capital requirements derived primarily from rates and development impact fees. The City authorized Red Oak Consulting to analyze the water utility's financial status and recommend rate and fee adjustments, as necessary, to assure the utility's continuing financial viability. The study includes:

- Development of a financial plan for fiscal year (FY) 2013;
- Analysis of customer class cost of service for FY 2013; and
- Design of water rates for FY 2013.

2.2. Financial Plan

Red Oak subdivided the water fund into the following subfunds and developed separate financial forecasts for each of these funds for the study period:

- Operating Fund
- Growth Capital Fund
- Non-Growth Capital Fund

2.2.1. Operating Fund

2.2.1.1. Reserves

Operating cash reserves available at the beginning of FY 2012 total an estimated $10.7 million. Red Oak recommends the utility maintain a minimum operating reserve of at least 90 days of O&M, or approximately $7.3 million.

2.2.1.2. Revenue

Operating fund revenue includes water sales revenue (from water rates), hydrant water sales, non-taxable water sales, irrigation sales, meter fees, bad debt recoveries, collection fees, late charges, investment income, and other miscellaneous sources.

Projected water sales revenue is based on a detailed analysis of bills for a recent 12-month period and projected change in the number of accounts. Based on recent historical trends, it is assumed the number of accounts will remain unchanged throughout the study period.

Projected revenue from miscellaneous sources reflects FY 2013 budgetary levels. There is no projected interest income.

2.2.1.3. Revenue Requirements

Operating fund revenue requirements include O&M, transfers to the growth fund, transfers to the non-growth fund, and debt service.

Water O&M includes the cost of personnel, materials, supplies, and services to acquire, treat and distribute water. Projected FY 2012 O&M is based on the adopted budget. FY 2013 O&M is projected to be 100% of FY 2012 base budget.

Transfers are made to the growth and non-growth capital funds to cash finance their respective portions of capital improvements. These transfers total $5.0 million during FY 2013.

Debt service consists of annual payments on outstanding and proposed debt obligations. Outstanding debt obligations include revenue and general obligation bonds. Most of these debt obligations were issued for both water and wastewater capital needs. The City provided information to identify the portion associated with financing water system improvements and growth versus non-growth responsibility for these projects. Table 2-1 summarizes the information used to allocate outstanding debt service.

Table 2-1:
Allocation of Outstanding Debt Obligations

Outstanding Debt Obligations	Water Portion of Total	Water Growth	Water Non-Growth
2003 General Obligation Bond	68%	-	68%
2003 Revenue Bond	46%	35%	11%
2006 Revenue Bond	77%	59%	18%
2007 Revenue Bond	52%	42%	10%
2008 Revenue Bond	44%	44%	-
2010 Revenue Bond	62%	-	62%
2012 Revenue Bond[1]	53%	36%	17%

(1) Issued during the study

Proposed debt obligations consist of revenue bonds to finance the proposed capital improvement program. Proposed debt service assumes equal annual payments of principal and interest based on a 20-year term and 5% annual interest rate.

The Water and Wastewater Bonds Master Ordinance contains covenants requiring the City to:

- Maintain revenues adequate to pay current system expenses;

- Produce combined water and wastewater minimum debt service coverage of 120%;
- Make all required payments into a bond reserve account; and
- Remedy any deficiencies in the required deposits.

These requirements support the need for targeting a debt coverage ratio of at least 130%.

2.2.1.4. Projected Water Sales Revenue Adjustments

Revenue should be sufficient to meet revenue requirements, provide required debt service coverage, and maintain adequate reserves. Water sales revenue from existing rates is adequate to meet these requirements for FY 2013, and the financial plan indicates rates remain at existing levels in FY 2013.

Red Oak recommends the water utility financial plan be updated annually to reflect changes in revenue, O&M, capital improvement needs, and capital financing requirements.

2.2.2. Capital Fund

2.2.2.1. Capital Improvement Program

Water Services staff developed a $5.7 million capital improvement program (CIP) for FY 2013. Major projects in the program include the water line replacements ($2.0 million), the Arrowhead Water Reclamation Facility ($800,000) and the New River / Agua Fria Storage Project ($1.3 million). The City's proposed program is funded from the Growth Capital Fund and the Non-growth Capital Fund and includes an annual inflation allowance.

2.2.2.2. Growth Capital Fund

The growth capital fund tracks financial activities associated with funding capital projects that are eligible to be funded with impact fee revenue. Red Oak's financial plan forecasts 100% of FY 2013 growth-related capital costs will be met from cash reserves and operating fund transfers.

Growth capital cash reserves available at the beginning of FY 2012 total an estimated $1.4 million. Red Oak does not recommend a minimum reserve for the growth capital fund.

2.2.2.3. Non-Growth Capital Fund

The non-growth capital fund tracks financial activities associated with funding capital improvements that are not eligible for impact fee funding. Red Oak's financial plan forecasts 30% of these costs will be met from revenue bond proceeds and 70% will be met from cash reserves and operating fund transfers in FY 2013.

Non-growth capital cash reserves available at the beginning of FY 2012 total an estimated $5.8 million. Red Oak recommends Water Services maintain a minimum non-growth capital reserve equal to $2.0 million.

2.3. Cost of Service Analysis

Red Oak conducted a comprehensive water utility cost of service analysis in accordance with standard methods supported by the American Water Works Association. We performed our analysis for the FY 2013 test year and determined the cost of providing water service to residential, commercial and sprinkler customers.

2.3.1. Revenue Requirements

The total FY 2013 revenue requirements equal $49,246,975, and consist of $30,034,026 of O&M and $19,212,949 of capital costs. These costs are projected to be met from $43,611,855 of annualized water sales revenue, $2,373,292 of other revenue sources, and $3,261,828 of operating reserves.

2.3.2. Units of Service

Water customers have been separated into residential, commercial and sprinkler classes. Service requirements are based on class average day, peak day, and peak hour demands, customer, and fire protection requirements.

The base cost responsibility of each customer class is related to the quantity of water used by each class under average day load conditions. Average day quantities are based on a detailed analysis of the City's water billing records.

The responsibility for extra capacity costs varies with extra capacity requirements for peak day and peak hour demands of each class. Average day usage and capacity factors, representing the estimated relationship between individual class peak demand and average day usage, are used to develop extra capacity requirements for peak day and peak hour demands. The estimated capacity factors are based on an analysis of each class's monthly usage characteristics.

Customer costs include utility billing costs, meter replacement and repair costs, and local distribution mains. The responsibility for these costs varies with number of accounts and size of meters.

Fire protection costs are either direct or demand related. Direct costs are related to maintenance of fire hydrants. Demand related costs represent the portion of extra capacity costs related to meeting potential fire demands. Peak fire flow requirements of 1,500 gallons per minute for two hours are estimated for residential customers and 3,500 gallons per minute for three hours for commercial customers. Peak fire flow estimates are

based on the guidelines set forth in the AWWA M31 Manual, *Distribution System Requirements for Fire Protection.*

2.3.3. Allocation to Cost Components

2.3.3.1. Functional Cost Components

Cost of water service is categorized into base, extra capacity, customer services, direct fire protection, and reclaimed water cost components. Base costs vary directly with the quantity of water used under average day load conditions. Extra capacity costs represent those costs incurred to meet peak demands for water in excess of average day usage. Total extra capacity costs are subdivided into costs associated with peak day and peak hour demands. Customer costs vary in proportion to the number of customers and the number and size of meters. Customer costs are subdivided into local distribution lines, meters and services and billing costs. Direct fire protection costs are associated with maintenance of fire hydrants. Reclaimed water costs are associated with the treatment, production, and delivery of reclaimed water.

2.3.3.2. Allocation Factors

The water utility is comprised of various facilities, each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the utility must be capable of providing total water demanded as well as water at peak rates of demand. Since all customers do not exert their maximum demand for water at the same time, capacities of water facilities are designed to meet coincidental demands of all classes of customers. For every facility on the system, there is an underlying average demand or uniform rate of usage exerted coincidentally by customers for which the base cost component applies.

Comparison of historical system coincidental peak day and peak hour demands to average day demands results in appropriate ratios for allocation of capital costs and O&M to base and extra capacity cost components. Peak day demands are about 1.5 times greater than average day demands in the City's system. This indicates that approximately 67% of the capacity of facilities designed and operated for peak day demand is needed for average or base use. Accordingly, the remaining 33% is for peak day extra capacity requirements.

Since peak hour water usage also utilizes facilities designed and operated for average day and peak day demands, costs associated with meeting peak hour demand are allocated to base, peak day extra capacity, and peak hour extra capacity. A ratio of peak hour to average day water use of 2.25 is based on demands experienced in the City's system. This ratio indicates that 44% of the capacity of facilities designed and operated for peak hour demand is needed for average or base use, 22% is required to meet peak day extra capacity demand, and the remaining 34% is for peak hour extra capacity demand.

2.3.3.3. Allocation to Functional Cost Components

Red Oak allocated revenue requirements to functional cost components using either the ratios described above or direct assignment. The allocations are according to the design or function of each facility or activity. The separation of costs into functional components provides a means for distributing such costs to various classes of customers based on their respective responsibilities for each particular type of service.

2.3.3.4. Unit Cost of Service

Unit cost of service forms the basis for rate design and is the quotient of functionalized cost of service divided by applicable units of service. Unit costs reflect the City's current policy of outside City rates being 30% higher than inside City rates.

2.3.4. Allocation of Cost to Customer Classes

The water utility serves residential, commercial and sprinkler customers. Class cost of service is the product of unit cost of service and class units of service. Fire protection costs are reallocated to residential and commercial classes since a separate public fire charge does not exist. This reallocation recognizes potential class fire demands. Reclaimed water costs are reallocated to all classes since a separate reclaimed water rate is not presently applied. This reallocation is based on class water sales volume. Table 2-2 summarizes the findings of the cost of service analysis by comparing class cost of service with revenue under existing rates.

Table 2-2:
Comparison of Water Utility Class Cost of Service with Revenue under Existing Rates
Test Year 2013

Line No.	Customer Class	Cost of Service	Revenue under Existing Rates	Indicated Revenue Adjustment
	Inside City			
1	Residential	$ 25,632,345	$ 25,365,010	1.1 %
2	Commercial	11,547,207	11,779,544	(2.0) %
3	Sprinkler	5,640,258	5,678,106	(0.7) %
4	**Total Inside City**	**$ 42,819,810**	**$ 42,822,660**	**0.0 %**
	Outside City			
5	Residential	476,423	467,527	1.9 %
6	Commercial	286,234	292,263	(2.1) %
7	Sprinkler	29,389	29,405	(0.1) %
8	**Total Outside City**	**$ 792,046**	**$ 789,195**	**0.4 %**
9	**Total Cost of Service**	**$ 43,611,856**	**$ 43,611,855**	**0.0 %**

2.4. Rate Design

In the development of schedules of rates for service, a basic consideration is to establish equitable charges to customers commensurate with the cost of providing service. As this cannot be done for each individual customer, rates are normally designed to meet average conditions for groups of customers having similar service requirements. Cost of service studies are the result of engineering estimates based to some extent upon judgment and experience, and detailed results should not be used as exact answers but as guides to the necessity for rate adjustments. Practical considerations may enter into the final choice of charges, recognizing such factors as previous rate levels, existing rate structures, the degree of adjustments indicated and policies concerning the application of rates.

2.4.1. Existing Rates

Existing rates have been in effect since July 2010 and have the following structure:

- Base charges vary by meter size.
- Volume charges for residential customers use a 4-block increasing rate structure.
- Commercial and sprinkler volume charges use a seasonal water rate structure where winter rates are applied to water use during the months of November through April, and summer rates are applied to all water use during the months of May through October.

2.4.2. Proposed Rates

Water rates in FY 2013 remain unchanged.

2.4.2.1. Base Charges

Cost of service base charges recover utility billing costs; meter reading, repair and replacement costs; and a portion of the local distribution main costs. Table 2-3 compares existing and proposed monthly base charges.

Table 2-3:
Comparison of Existing and Proposed Monthly Water Base Charges[1]

Meter Size	Existing Rates	Proposed FY 2013 Rates
(inch)	*(per bill)*	*(per bill)*
5/8	$ 9.70	$ 9.70
3/4	12.30	12.30
1	17.40	17.40
1 ½	35.30	35.30
2	62.90	62.90
3	106.00	106.00
4	189.00	189.00
6	376.00	376.00
8	557.00	557.00
10	896.00	896.00
12	1,326.00	1,326.00

(1) Inside City rates are shown. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.

2.4.2.2. Residential Volume Charges

Red Oak designed the existing cost of service residential volume charges using the existing 4-block increasing rate structure. The rate for the second block is 25% greater than the first block rate. The third and fourth block rates are 40% greater than the preceding block rates. Table 2-4 compares existing and proposed residential water volume charges.

Table 2-4:
Comparison of Existing and Proposed Residential Water Volume Charges[1]

Monthly Usage	Existing Rates	Proposed FY 2013 Rates
(Kgal)	*(per Kgal)*	*(per Kgal)*
First 6	$ 2.14	$ 2.14
Next 9	2.68	2.68
Next 15	3.76	3.76
Over 30	5.27	5.27

(1) Inside City rates are shown. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.

2.4.2.3. Residential Monthly Bill Impacts

Table 2-5 compares typical monthly residential water bills under existing and proposed FY 2013 rates. The monthly bill for the median residential customer (9,000 gallons) would remain unchanged under proposed rates.

Table 2-5:
Monthly Residential Water Bills[1]
5/8-inch Meter

Monthly Usage	Percent of Total Bills	Cumulative Percent	Existing Rates	Proposed Rates	Change
(gallons)					
0	2.9%	2.9%	$ 9.70	$ 9.70	$ 0.00
1,000	2.1%	5.0%	11.84	11.84	0.00
2,000	3.6%	8.6%	13.98	13.98	0.00
3,000	4.9%	13.5%	16.12	16.12	0.00
4,000	6.2%	19.7%	18.26	18.26	0.00
5,000	6.8%	26.5%	20.40	20.40	0.00
6,000	6.9%	33.4%	22.54	22.54	0.00
7,000	6.8%	40.2%	25.22	25.22	0.00
8,000	6.4%	46.6%	27.90	27.90	0.00
9,000	**5.9%**	**52.5%**	***30.58***	***30.58***	***0.00***
10,000	5.3%	57.8%	33.26	33.26	0.00
11,000	4.8%	62.6%	35.94	35.94	0.00
12,000	4.2%	66.8%	38.62	38.62	0.00
13,000	3.8%	70.6%	41.30	41.30	0.00
14,000	3.3%	73.9%	43.98	43.98	0.00
15,000	3.0%	76.9%	46.66	46.66	0.00
16,000	2.6%	79.5%	50.42	50.42	0.00
17,000	2.3%	81.8%	54.18	54.18	0.00
18,000	2.0%	83.8%	57.94	57.94	0.00
19,000	1.8%	85.6%	61.70	61.70	0.00
20,000	1.5%	87.1%	65.46	65.46	0.00
21,000	1.4%	88.5%	69.22	69.22	0.00
22,000	1.3%	89.8%	72.98	72.98	0.00
23,000	1.1%	90.9%	76.74	76.74	0.00
24,000	0.9%	91.8%	80.50	80.50	0.00
25,000	0.9%	92.7%	84.26	84.26	0.00
26,000	0.7%	93.4%	88.02	88.02	0.00
27,000	0.7%	94.1%	91.78	91.78	0.00
28,000	0.6%	94.7%	95.54	95.54	0.00
29,000	0.5%	95.2%	99.30	99.30	0.00
30,000	0.5%	95.7%	103.06	103.06	0.00

(1) Bills shown are based on inside City rates.

2.4.2.4. Commercial and Sprinkler Volume Charges

Red Oak designed the existing cost of service commercial and sprinkler volume charges using a seasonal water rate structure. In this structure, winter rates are applied to water use during the months of November through April, and summer rates are applied to all water use during the months of May through October. Tables 2-6 and 2-7 compare existing and proposed commercial and sprinkler water volume charges, respectively.

Table 2-6:
Comparison of Existing and Proposed Commercial Water Volume Charges[1]

Block	Existing Rates	Proposed FY 2013 Rates
	(per Kgal)	*(per Kgal)*
Winter[2]	$ 2.28	$ 2.28
Summer[3]	2.85	2.85

(1) Inside City rates are shown. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.
(2) Winter rates apply to water use during the months of November through April.
(3) Summer rates apply to all water use during the months of May through October.

Table 2-7:
Comparison of Existing and Proposed Sprinkler Water Volume Charges[1]

Block	Existing Rates	Proposed FY 2013 Rates
	(per Kgal)	*(per Kgal)*
Winter[2]	$ 2.58	$ 2.58
Summer[3]	3.23	3.23

(1) Inside City rates are shown. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.
(2) Winter rates apply to water use during the months of November through April.
(3) Summer rates apply to all water use during the months of May through October.

3. Wastewater Rates

3.1. Introduction

The City provides wastewater service to over 54,700 customer accounts. The City's wastewater operations are financially self-sufficient with funding for O&M and capital requirements derived primarily from rates and development impact fees. The City authorized Red Oak Consulting to analyze the wastewater utility's financial status and recommend rate adjustments, as necessary, to assure the utility's continuing financial viability. The study includes:

- Development of financial plan for fiscal year (FY) 2013;
- Analysis of customer class cost of service for FY 2013; and
- Design of wastewater rates for FY 2013.

3.2. Financial Plan

Red Oak subdivided the wastewater fund into the following subfunds and developed separate financial forecasts for each of these funds for the study period:

- Operating Fund
- Growth Capital Fund
- Non-Growth Capital Fund

3.2.1. Operating Fund

3.2.1.1. Reserves

Operating cash reserves available at the beginning of FY 2012 total an estimated $6.1 million. Red Oak recommends the utility maintain a minimum operating reserve of at least 60 days of O&M, or approximately $3.0 million.

3.2.1.2. Revenue

Operating fund revenue includes wastewater service revenue (from wastewater rates), effluent revenue, collection fees, late charges, investment income, and other miscellaneous sources.

Projected wastewater service revenue is based on a detailed analysis of bills for a recent 12-month period and projected change in the number of accounts. Based on recent

historical trends, it is assumed the number of accounts will remain unchanged throughout the study period.

Projected revenue from miscellaneous sources reflects FY 2013 budgetary levels and anticipated system growth. There is no projected interest income.

3.2.1.3. Revenue Requirements

Operating fund revenue requirements include O&M, transfers to growth fund, transfers to non-growth fund, and debt service.

Wastewater O&M includes the cost of personnel, materials, supplies, and services to collect, treat and discharge wastewater. Projected FY 2012 O&M is based on the adopted budget. FY 2013 O&M is projected to be 100% of FY 2012 base budget.

Transfers are made to the growth and non-growth capital funds to cash finance their respective portions of capital improvements. These transfers total $7.1 million during FY 2013.

Debt service consists of annual payments on outstanding and proposed debt obligations. Outstanding debt obligations include revenue and general obligation bonds. These debt obligations were issued for both water and wastewater capital needs. The City provided information to identify the portion associated with financing wastewater system improvements and growth and non-growth responsibility for these projects. Table 3-1 summarizes the information used to allocate outstanding debt service.

Table 3-1:
Allocation of Outstanding Debt Obligations

Outstanding Debt Obligations	Wastewater Portion of Total	Wastewater Growth	Wastewater Non-Growth
2003 General Obligation Bond	32%	-	32%
2003 Revenue Bond	54%	41%	13%
2006 Revenue Bond	23%	18%	5%
2007 Revenue Bond	48%	38%	10%
2008 Revenue Bond	56%	15%	41%
2010 Revenue Bond	38%	-	38%
2012 Revenue Bond [1]	47%	36%	11%

(1) Issued during the study.

Proposed debt obligations consist of revenue bonds to finance the proposed capital improvement program. Proposed debt service assumes equal annual payments of principal and interest, 20-year term, and 5% annual interest rate.

The Water and Wastewater Bonds Master Ordinance contains covenants requiring the City to:

- Maintain revenues adequate to pay current system expenses;
- Produce combined water and wastewater minimum debt service coverage of 120%;
- Make all required payments into a bond reserve account; and
- Remedy any deficiencies in the required deposits.

These requirements support the need for targeting a debt coverage ratio of 130%.

3.2.1.4. Projected Wastewater Service Revenue Adjustments

Revenue should be sufficient to meet revenue requirements, provide required debt service coverage and maintain adequate reserves. Wastewater service charge revenue from existing rates is inadequate to meet these requirements throughout the study period. The financial plan indicates rates remain at existing levels in FY 2013.

Red Oak recommends the wastewater utility financial plan be updated annually to reflect changes in revenue, O&M, capital improvement needs, and capital financing requirements.

3.2.2. Capital Fund

3.2.2.1. Capital Improvement Program

Water Services staff developed a $7.7 million CIP for FY 2013. Major projects in the program include sewer line replacements ($3.3 million), Arrowhead Water Reclamation Facility ($2.3 million) and 91st Ave. Construction ($700,000). The City's proposed program is funded from the Growth Capital Fund and the Non-growth Capital Fund and includes an annual inflation allowance.

3.2.2.2. Growth Capital Fund

The growth capital fund tracks financial activities associated with funding capital projects that are eligible for funding from impact fee revenue. Red Oak's financial plan forecasts 100% of these costs will be met from revenue bond proceeds.

Growth capital cash reserves available at the beginning of FY 2012 total an estimated $1.2 million. Red Oak does not recommend a minimum reserve for the growth capital fund.

3.2.2.3. Non-Growth Capital Fund

The non-growth capital fund tracks financial activities associated with funding capital improvements that are not eligible to be funded with impact fee revenue. Red Oak's

financial plan forecasts 100% of these costs will be met from cash reserves and operating fund transfers.

Non-growth capital cash reserves available at the beginning of the study period total an estimated $7.6 million. Red Oak recommends the utility maintain a minimum non-growth capital reserve equal to $2.0 million.

3.3. Cost of Service Analysis

Red Oak conducted a comprehensive wastewater utility cost of service analysis in accordance with standard methods supported by the Water Environment Federation. We performed our analysis for the FY 2013 test year and determined the cost of providing wastewater service to residential and commercial customers.

3.3.1. Revenue Requirements

The total fiscal year 2013 revenue requirements equal $35,518,092 and consist of $18,465,290 of O&M and $17,052,802 of capital costs. These costs are projected to be met from $32,087,283 of annualized wastewater service charge revenue, $218,795 of other revenue sources, and $3,212,014 of operating reserves.

3.3.2. Units of Service

Service requirements are based on class volume contributed, strength of discharge, and number of bills.

Wastewater volume consists of two elements: contributed sewer flow and infiltration/ inflow (I/I) of groundwater into the sewers. Contributed sewer flow is that portion of the annual water usage entering the wastewater sewer system. Estimates of the contributed volume are based on average winter water usage which generally excludes non-sewer water uses such as lawn sprinkling and car washing.

I/I represents approximately 12% of the total wastewater flow reaching the treatment plants. Each class should bear its proportionate share of the costs associated with I/I, as the sewer system must be adequate to convey and process the total wastewater flow. Red Oak estimates that three-fourths of I/I is based on the number of customers and one-fourth of I/I is based on contributed volume.

Total strength units are based on the City's estimate of projected strength of wastewater contributed to their system during the test year. Based upon an analysis of wastewater treatment plant data, the average wastewater concentration is estimated at 250 milligrams per liter (mg/L) for BOD and 270 mg/L for TSS. The estimated average wastewater strength is based upon consideration of the recorded total quantity of pollutants in the flow reaching the treatment plants.

The wastewater utility share of customer related billing costs is allocated on the basis of the number of bills.

3.3.3. Allocation to Cost Components

3.3.3.1. Functional Cost Components

Cost of waste water service is categorized into volume, strength and customer service cost components. Volume costs vary directly with the quantity of wastewater contributed and include capital costs related to investment in system facilities which are sized on the basis of wastewater volume, O&M related to those facilities, and the expense of volume related treatment chemicals and electric power.

Strength costs consist of O&M and capital costs related to system facilities which are designed principally on the basis of quantity of pollutants in the wastewater. Strength costs are further separated into BOD and TSS.

Customer costs vary in proportion to the number of bills issued. Customer costs are subdivided into local collector sewers and billing costs.

3.3.3.2. Allocation to Functional Cost Components

Red Oak allocated revenue requirements to functional cost components using either the ratios described above or direct assignment. The allocations are according to the design or function of each facility or activity. The separation of costs into functional components provides a means for distributing such costs to various classes of customers based on their respective responsibilities for each particular type of service.

3.3.3.3. Unit Cost of Service

Unit cost of service forms the basis for rate design and is the quotient of functionalized cost of service divided by applicable units of service. Unit costs reflect the City's current policy of outside City rates being 30% higher than inside City rates.

3.3.4. Allocation of Cost to Customer Classes

The wastewater utility serves residential and eleven different groups of commercial customers. Class cost of service is the product of unit cost of service and class units of service. Table 3-2 summarizes the findings of the cost of service analysis by comparing class cost of service with revenue under existing rates.

Table 3-2:
Comparison of Wastewater Cost of Service with Revenue under Existing Rates
Test Year 2013

Line No.	Customer Class	Cost of Service	Revenue Under Existing Rates	Indicated Adjustment
	Inside City			
1	Residential	$ 27,081,501	$ 27,155,296	(0.3) %
	Commercial			
2	Group 2	59,177	57,262	3.3 %
3	Group 3	940,129	919,554	2.2 %
4	Group 4	529,014	515,039	2.7 %
5	Group 5	744,145	730,848	1.8 %
6	Group 6	185,068	183,671	0.8 %
7	Group 7	27,088	26,814	1.0 %
8	Group 9	61,083	61,000	0.1 %
9	Group 10	392,127	388,307	1.0 %
10	Group 11	2,054,173	2,035,684	0.9 %
11	**Total Inside City**	**$ 32,073,505**	**$ 32,073,475**	**0.0 %**
12	Outside City	13,778	13,808	(0.2) %
13	**Total Cost of Service**	**$ 32,087,283**	**$ 32,087,283**	**0.0 %**

3.4. Rate Design

In the development of schedules of rates for service, a basic consideration is to establish equitable charges to customers commensurate with the cost of providing service. As this cannot be done for each individual customer, rates are normally designed to meet average conditions for groups of customers having similar service requirements.

The cost of service studies are the result of engineering estimates based to some extent upon judgment and experience, and detailed results should not be used as exact answers but as guides to the necessity for rate adjustments. Practical considerations may enter into the final choice of charges, recognizing such factors as previous rate levels, existing rate structures, the degree of adjustments indicated, and policies concerning the application of rates.

3.4.1. Existing Rates

Existing rates have been in effect since July 2010. Wastewater rates include a monthly base charge for all customers and volume charges that vary by class. The volume charge

is applicable to the billable wastewater volume, which is determined for each customer class as follows:

- Residential customers: 90% of average monthly water usage during January, February and March.
- Commercial customers: 95% of average monthly water usage during January, February and March.

3.4.2. Cost of Service Rates

Red Oak developed revenue neutral wastewater rates to equitably recover class cost of service using the City's existing rate structure.

3.4.2.1. Base Charge

Red Oak designed the existing cost of service base charge to recover utility billing, customer related I/I, and a portion of local sewer costs. Table 3-3 compares existing and cost of service monthly base charges.

Table 3-3:
Comparison of Existing and Proposed Monthly Wastewater Base Charges(1)

Customer Class	Existing	Proposed FY 2013
	(per bill)	*(per bill)*
All Customers	$ 9.20	$ 9.20

(1) Inside City rates are shown. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.

3.4.2.2. Volume Charge

Red Oak designed the existing cost of service volume charges to recover contributed volume, volume related I/I, and strength costs. Table 3-4 compares existing and proposed volume charges.

Table 3-4:
Comparison of Existing and Proposed Wastewater Volume Charges[1]

Customer Class	Existing	Proposed FY 2013
	(Per Kgal)	*(Per Kgal)*
Residential	$ 3.56	$ 3.56
Commercial		
Group 2	2.39	2.39
Group 3	2.82	2.82
Group 4	3.00	3.00
Group 5	2.92	2.92
Group 6	3.26	3.26
Group 7	3.59	3.59
Group 8	6.46	6.46
Group 9	3.55	3.55
Group 10	6.98	6.98
Group 11	7.03	7.03
Group 12	10.50	10.50

(1) Inside City rates are shown. Outside City rates are 1.3 times greater than inside City rates, in accordance with City policy.

3.4.3. Residential Monthly Bill Impacts

Table 3-5 compares typical monthly residential wastewater bills under existing and proposed FY 2013 rates. The monthly bill for the median residential customer (6,000 gallons) would remain unchanged under the proposed rates.

4. Urban Irrigation Rates[1]

4.1. Purpose

This report provides a fiscal overview of the Glendale Urban Irrigation Water Program. It contains revenue and expenditure information that may be considered in determining appropriate user rates for urban irrigation water services provided by the City.

4.2. Background

The City has provided irrigation water service to its residents since 1912 (then the Town of Glendale). Ordinance Number 27 was adopted on January 8, 1912. This ordinance stipulated that the City is responsible for distribution of all irrigation water throughout the designated area and repair and maintenance of the main ditches and branches that run through the City's streets.

The initial irrigation service area was bounded by Orangewood, Maryland, 53rd, and 63rd Avenues. As the city developed, additional parcels were added to the service area. Landowners in other areas opted to receive service directly from the Salt River Project. At that time, the City's provision of irrigation service was determined to be mutually beneficial to the City and to its customers. The City ensured a high level of customer service, coordinated the times for water deliveries, and minimized water damage to the streets and to residents' property. At its peak, the irrigation system served approximately 1,600 customers.

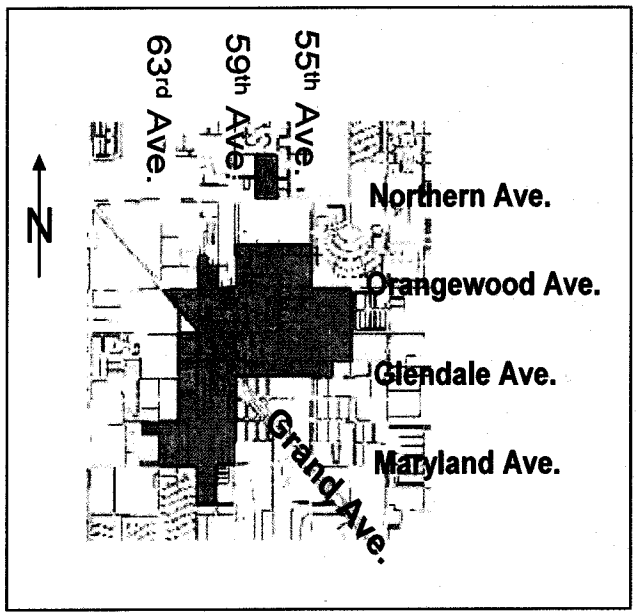

Figure 1 – Irrigation Service Area

Over time the number of urban irrigation water customers receiving service from the city declined. During FY 2011, the irrigation system served a monthly maximum of 336 customers in the area shown in Figure 1. Once an urban irrigation customer opts to discontinue service to their property, the discontinuance of service is permanent.

[1] The 2011 Urban Irrigation Water Program Report was prepared by City of Glendale staff. At the City's request, Red Oak included it in this report as Section 4.

Irrigation water is delivered during a seven-month irrigation service season through a delivery system that currently consists of approximately 23 miles of mains, valves, and other appurtenances. The City provides the urban irrigation water service. During FY 2011, the City received and delivered approximately 561 ac-ft of irrigation water. The water right used for urban irrigation is actually held by the Salt River Project.

4.3. Rates and Revenues

The City receives revenues from urban irrigation water service rates charged to its customers. The rates are set by City Council. Over the past few years, Council has raised urban irrigation rates the same percentages as the drinking water rates. The current urban irrigation water rate schedule is shown in Table 4-1.

Table 4-1:
FY 2012 Urban Irrigation Water Rate Schedule By Lot Size

Lot Size Range (Square Feet)	Annual Fee	Monthly Fee
0 - 12,000	$ 169.80	$ 24.26
12,001 - 15,000	195.28	27.90
15,001 - 18,000	220.75	31.54
18,001 - 21,000	246.23	35.17
21,001 - 24,000	271.70	38.81
24,001 - 27,000	297.16	42.46
27,001 - 30,000	322.64	46.09
30,001 - 33,000	348.11	49.73
33,001 - 36,000	373.59	53.37

Since FY 1998, revenues from the City's urban irrigation program ranged from a high of $63,423 (not adjusted for inflation) in FY 1998 to a low of $42,831 (not adjusted for inflation) in FY 2008. Revenues for the most current fiscal year (FY 2011) totaled $56,370.

4.4. Expenditures

The City incurs operation and maintenance costs to provide urban irrigation water services. The expenditures are for the operation, maintenance, and repair of the water system and include the costs for one full-time City employee responsible for the oversight, operation, and maintenance of the system, irrigation water costs, labor costs for the irrigation company responsible for water deliveries, and for necessary equipment and materials required for repairs, as well as administrative costs for billing and customer support. Expenditures vary from year-to-year, the maximum of $223,065 occurring in FY 2008 (Figure 2). FY2011 expenditures were $193,118.

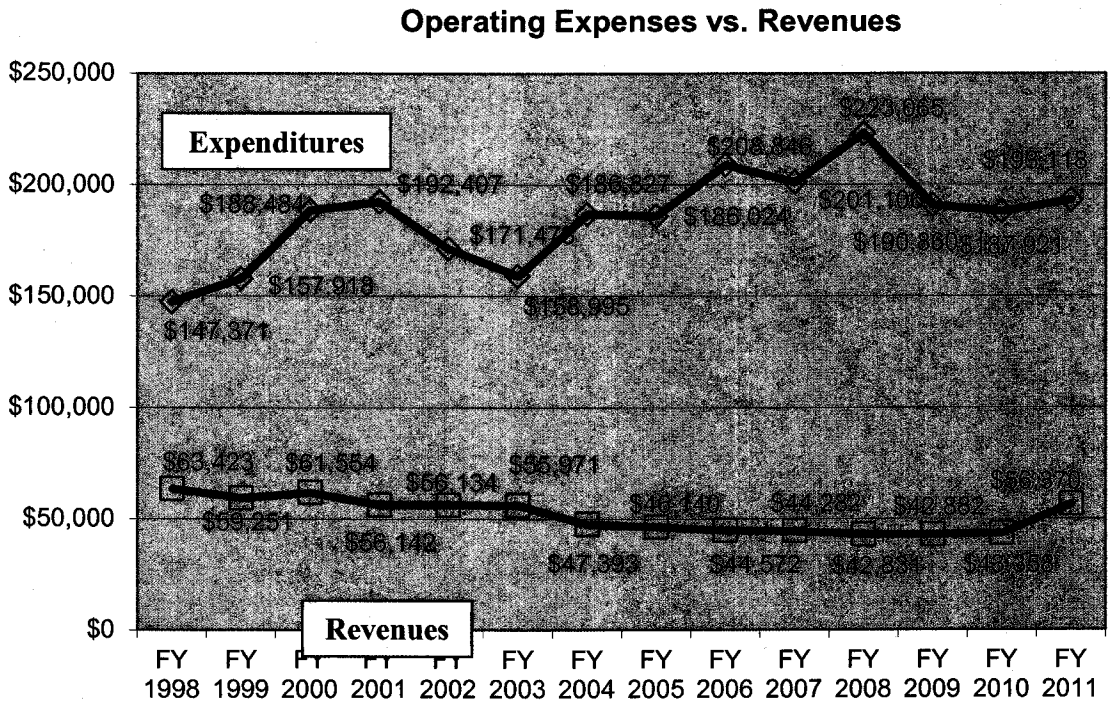

Figure 2 – Revenues vs. Expenditures (1998 – 2011, not adjusted for inflation)

4.5. Revenues Compared to Expenditures

Over the 14 previous fiscal years, urban irrigation water service revenues were much lower than expenditures for the service. FY 2011 revenues covered approximately 29% of the O&M costs.